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Some Comments on Contemporary Geographic Method

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Practitioners of scholarly disciplines have always been accorded the privilege of criticizing the work of their fellows. Much of the criticism thus permitted appears in periodical literature as specific comment on individual writings. But the privilege is also extended to include general commentary that an individual may on occasion feel called upon to utter more fully than he can in specific reviews of literature and more overtly than in the correspondence he carries on with his colleagues. Availing myself of this privilege, I have set down here certain reflections that have been uppermost in my mind in recent months. I ask for them no more consideration than is due to the necessarily tentative opinions held by one man at a particular moment in his intellectual development. If the reader finds some statements expressed with what may seem to him undue dogmatism, I ask him to recall in charity that ideas naturally assume in the mind the form of declarative sentences; and ask him further to supply where it is needed the qualifying "perhaps."

REGIONAL DESCRIPTION

Having accepted the principle that geographic writing means the systematic description of regions—of different magnitudes and defined by different criteria—a considerable group of American academic geographers has wrestled for several years with the methodology of such description and of the research in which it may be grounded. Just as the naïve aim of historical writing may be defined as the narration of past events "as they

really happened," so the naïve aim of regional description may be taken to be the presentation of selected and defined regions "as they really are." But neither historical narrative nor regional description can fully attain the aim thus naïvely defined. There must be a selection of items, and selection presupposes guiding principles. The methodologic discussions our regionalists have indulged in have been concerned with possible principles of selection and with techniques of array of the data selected. The authors of most regional descriptions, however, lacking the impulse to inquire critically into the principles according to which they work, follow a traditional scheme that is so familiar as to be wearisome: climate, relief, soils, and so on through a catalog that anyone can name without thinking. When this scheme is used in reference works intended for the general public, it has its obvious advantages. The visitor to the reference room of a public library is grateful for the systematic organization of information concerning the several parts of the earth. Organization of this information according to a familiar, traditional scheme makes it readily accessible in the same manner as arrangement of material in encyclopedias alphabetically under familiar words makes accessible a wider range of information.

But there is a lower limit of magnitude of the areal unit below which the general reader experiences difficulty in finding the information he seeks. This limit can not, of course, be expressed as a certain number of square kilometers. Every general reader would expect to find information about Belgium under the name of that state, but would not be familiar with the name, say of a county in Wyoming having an equal area. It is true also that the area of this smallest practicable unit of assemblage of regional information changes with time. At the end of the eighteenth century a heading "Canada" or "United States" sufficed for Europeans as an index to information about these parts of the earth. In the twentieth century the European who consults a reference work may be expected to know the names of political subdivisions of the United States and Canada, so that the larger amount of information available can be distributed among sections with headings such as "Texas," "Oregon," "Ontario," "Saskatchewan." Where the lower limit of size of region is to be drawn in general reference works may be left to the tact of editors. The question of a limit arises again, however, in regard to works written for professional geographers. They may be expected to have a more detailed familiarity with regional names than the general public has, so that smaller areas may be used as units of aggregation. The geographic library is more specialized than the general reference library, and so may make room for works in which smaller subdivisions of the earth's surface are described in greater detail. But even here a limit must exist. Even the most hospitable geographic library can not

be expected to absorb an indefinitely large number of topographic writings: a number potentially limited only by the diligence of authors and by the financial subventions available to pay for the printing of some fraction of the large number of possible regional treatises.

A vision of the whole surface of the earth plastered with topographic descriptions—like the luggage of a round-the-world tourist with hotel stickers—is one that must terrify even the most tolerant reader of regional descriptive literature. Among the indefinitely large number of regions that may be subjected to detailed systematic description there must be selection of those that are to be exhibited. A selection has always been made in the past, if by no more delicate a criterion than the potential market for topographic writings. This basis of selection is not to be scorned. Some places are intrinsically more interesting to either the general or the professional public than others: a book about Florence will find a thousand readers where a description of Bloomington, Illinois, will find one. Many qualities of places serve as grounds for selections thus indirectly made by the reading public. Historical associations, rank as political capitals, or presence of famous architectural monuments may confer distinction among places located within the same general part of the earth. A perfectly ordinary place may on occasion be selected for description as a type, but the representative of a type may be designated by a number as well as by a name. It may be called by a fictitious name, like the Lynds' "Middletown," and be none the more imperfectly known. The place considered as typical may have any name, or its true name may become a common rather than a proper noun. There may actually be a Podunk, but not one in a thousand who speak that name knows or cares where it is on the topographic map. If the description of a Middletown or a Podunk is once done, this description removes from the field of possible objects not only a particular locality, but in addition all the other members of the class it is taken to typify.

It is perhaps as representative of classes of regions that many regional descriptions would be justified by their authors. If so, it would appear from the published literature that the enthusiastic regionalist can find classes and subclasses the ordinary unprejudiced reader can not distinguish. Classification, if carried far enough, becomes an enumeration of individuals. And whether the localities are chosen as representative samples of classes or as unique phenomena, the piling up of an indefinite number of regional descriptions is equally appalling to the prospective reader. "The chaos of events," remarks Alexander Goldenweiser, "if merely restated, is unendurable to the mind."[1] And further: "Anyone who has experienced the psychic

[1] Nature and Tasks of the Social Sciences, *Jour. Social Philos.*, Vol. 2, 1936, pp. 5–34. Reference to p. 7.

shock of a lengthy visit to a well-stocked museum or a department store knows how sickening to the mind is the presentation, simultaneously or in rapid succession, of wholly disconnected items." The simple psychologic fact cited by Goldenweiser is, I think, an absolutely unanswerable argument against a program for professional geographers that would assign them the task of "presentation, simultaneously or in rapid succession," of an indefinitely large number of topographic descriptions.

In all branches of scholarly investigation a preliminary sorting of observational data into descriptive classes seems to be a necessary preliminary to a genetic, explanatory arrangement of the same data. Regional description can hardly claim to be the preliminary descriptive procedure in dealing with the content of the landscape, since many of the descriptive data (the products of censuses and surveys) are already accessible. And so far as the region as a whole is concerned, it can not possibly be the unit of the ultimate genetic and explanatory grouping, since an explanatory category can not include more than a single homogeneous fraction of the content of the region. The association of components that goes to make up a region is always to a greater or less degree fortuitous; even within such a relatively homogeneous class of data as the climatic, the processes that determine, for example, temperature and precipitation within any given region follow different laws, so that explanatory treatment must deal with them separately. And though at some future date we may possibly be able to reduce the discussion of climate to a certain degree of homogeneity, the geologic make-up of the region stands as a totally different category of facts, the explanation of which requires a completely new start. The cultural elements of the landscape have, of course, a further completely different genetic organization, and their distribution with respect to the components of the natural landscape is always to a considerable degree fortuitous. There is no prospect of our finding a theory so penetrating that it will bring into rational order all or a large fraction of the heterogeneous elements of the landscape. There is no prospect of our finding such a theory, that is to say, unless it is of a mystical kind, and so outside the pale of science.

There must be, to return to an earlier phase of the argument, selection among regions to be described as well as selection of items of information to be included in regional or topographic descriptions. But the regionalist position provides no logically given criteria for selection, save the most general one that the region selected exist on the earth. (There is room here for an excellent academic-geographic hoax: who could detect in a large regionalistic literature the spuriousness of a circumstantial description of an imaginary mid-western township?) Selection there must be; and the criteria given by common intelligence, not by the regionalist position, are (1)

uniqueness due to some distinction independent of the practise of regional description (a pragmatic criterion) and (2) typicality. Neither criterion, it seems to me, justifies the focusing of the energies of all the practitioners of one scientific discipline. If the appeal of a place to general or specialized interest is, let us say, based on some military event that took place in or near it, the historian of that event may justly claim precedence over the geographer in elucidating the topographic along with the other aspects of the event. If a locality is associated with the life of some well-known personage, the biographer of that personage has first claim to the association of his subject with the locality. The view of a locality as representative of a type has significance only with reference to whatever the locality is taken to typify: again the criterion of selection lies outside any discipline that concerns itself, by definition, with regions as such.

A favorite approach to regional description is the economic. The regionalist, if he focuses his attention on the manner in which the inhabitants of his regions make their livings, seems to consider that he thereby gives some justification, not otherwise available, for his labors; even though he refrains, as he often does not, from venturing a prediction concerning the economic future of the region. The sanction he draws upon here is one that may be expected to appeal to hard-headed members of the general public, who can understand commercial matters though sublimely—and pardonably—indifferent to questions of abstract scholarship. It would seem, however, to the thoughtful reader, that there is more pose than reality in this justification of regional studies. It is scarcely to be supposed that the business man can learn much about his business from the academic geographer. The economic twist given to regional studies seems to be in general scarcely more than a sop to a commercial Cerberus.[2]

A slightly different judgment may be rendered when regional investigation is done under the auspices of bureaucratic planning agencies. The regional study as resource survey has for such agencies a real value. The resource surveyor is, however, something other than an autonomous scholar; he is a technician absorbed in one small phase of a large enterprise over which he has no general control: a worker on an assembly line. A useful worker undoubtedly, and one who might with good reason pray for deliverance from the unasked attentions of the critical academic. But however

[2] These strictures do not mean that I deny the scholarly and even the direct commercial value of occasional economic-geographic investigations. I am speaking here only of the justification of regional studies *per se* by an appeal to regional economics. Neither do I decry the regional organization of information concerning the earth for the purpose of elementary and secondary instruction. The argument is concerned exclusively with regional description as a program of research by presumably mature scholars.

useful he may be, he is in a different class from the scholar proper, whose work is founded on the scholarly tradition, is judged by the standards of that tradition, and, if it passes the severe test to which it is subjected, becomes a part of the permanent corpus of scholarly writings. The economic slant to regional studies does not guarantee anything regarding the permanent value of such studies. It does not of necessity exclude them from the company of lasting scholarly works, but its sanction is extraneous and incidental. It offers no solid ground on which a program of regional investigation can be erected.

"SYNTHESIS"

The considerations stated in the foregoing are obvious, and are not presented as reflecting any particularly penetrating critical acumen. Our regionalists have apparently taken their stand on the possibility that by asserting the existence of a field not pre-empted or a point of view not occupied by the practitioners of other disciplines they have laid the foundation for fruitful and satisfying scholarly activity. Their attitude would imply that an arbitrarily selected point of view of "naïvely given" phenomena suffices to establish a science. Vaughan Cornish tried forty years ago to establish a science of "kumatology" that would concern itself with wave forms in solid, liquid, and gaseous media. But the phenomena with which that prospective science was to deal are too heterogeneous to be arrayed as yet under any conceivable set of principles or techniques of investigation with the aid of which a single practitioner might work skilfully and with the prospect of permanent results. Whatever insight into the rationale of waves has been achieved since Cornish coined a word and imagined he had thereby inaugurated a science has come from workers who proceed from a much more limited, but more solid base: from the principles, namely, of hydrodynamics.

Compared with areas on the surface of the land, wave forms are highly elementary phenomena. Is is possible that a science can be founded by taking for its field so heterogeneous phenomena as arbitrarily selected fragments of the land? In view of Cornish's much more modest but nevertheless abortive venture, the prospect seems extremely doubtful. Who, in the present state of the sciences, can honestly assert his competence to understand all the natural phenomena to be observed in a region of whatever magnitude, to say nothing of the cultural phenomena in addition? One gets, in response to such questions, the plea of synthesis as opposed to analysis. One is also reminded that selection of facts is to be made. But it is a selection for which no definite guide can be deduced from the regionalist position, so that the individual doing the job is almost exclusively

responsible for the choice he makes. Can there be a science that operates by the "synthesis" of arbitrarily selected heterogeneous facts? One may have a body of doctrine that so operates, but it is likely to be a cult rather than a science. The reader can supply his own examples.

There is only one intellectually respectable mode of apprehension and expression in which there is synthesis of heterogenous and arbitrarily selected facts: the artistic. Its sanction, the basis of whatever validity its products possess, is given by the skill and intellectual integrity of the artist alone. That skill and integrity raise art above the status of a cult. Its subjectivity distinguishes it from science. Artistic cults there may be, and artistic techniques drawn from science. But these relations to cult and science are inessential: the artist's work remains the communication through technical skill of arbitrarily selected and subjectively perceived experience. In the present state of science, and in any future state that may be expected to grow out of its present state, the scientist must proceed by analysis, and his insight is the more profound the more thorough his analysis. The artist is the synthesist of phenomena; so far as we can see, the only one who can join intellectual incommensurables to form a comprehensible and satisfying conceptual whole.

Let anyone recollect the verbal presentations of regions that have stuck fast in his memory. They are, though written by an Alexander von Humboldt, artistic presentations. Can anyone think of the tropical forest without recalling W. H. Hudson's descriptions? Does not Robert Frost's poetry convey a more accurate synthetic impression of rural New England than volumes of factual regional description? Literary art, not systematic description, is the proper medium of regional synthesis. The regionalist admits as much when he resorts to the colorful adjective and the startling juxtaposition of phrase in order to enliven the drab objectivity of map and numerical table.

Regional art there may be, is, and has been, and artistic regional description forms a considerable part of it. Can there be regional science (using "science" to mean orderly presentation of new facts and insights) except in those stages of knowledge of a region when the details to which science will ultimately analyze it are still unknown? That question is intended to suggest that there may be today regional science of parts of Antarctica, for example, but little or none of Ohio. It is intended to suggest that every advance in knowledge concerning a region restricts by so much the possibility of there being a regional science concerning it. After the first regional descriptions of territory that has just come into the ken of the scientific world, analytic science steps in to dissect and digest whatever phenomena are disclosed by closer observation. After a preliminary scientific recon-

naissance, analytic science may continue indefinitely in its investigation of details of the region, and art may continue as indefinitely to discover it in new subjective experiences to communicate. But the clock of knowledge concerning a region can not successfully be turned back to the earliest days of observation. The natural phenomena of territory that has been topographically mapped and geologically surveyed, over which there is a network of meteorologic observing stations, the fauna and flora of which have been collected and studied for generations, are simply *not* "naïvely given."

WORKS OF ART IN THE CULTURAL LANDSCAPE

Perhaps it is an uneasy but unadmitted consciousness of this fact that has led many of our regionalists to turn from physical to cultural phenomena, and to place the center of gravity of their regional expositions in the cultural rather than in the natural realm. Or perhaps it is recognition that in the cultural realm they find, at least over a considerable part of the United States, "naïvely given" phenomena not yet contaminated by analytic investigation. American settlement forms provide a field of investigation that has as yet been barely touched; a field that will yield material to a large number of workers for a long time to come. In so far as our professed geographers have given attention to them, settlement forms have as a class of phenomena heretofore been generally subordinated to the regionalistic principle: to the dream, in my opinion the vain dream, of a science of regions. It is a source of gratification, therefore, to note the emergence among our professed geographers of analytic treatment of one set of settlement phenomena, namely native houses.[3] The class of studies represented —and, let us hope, foreshadowed—by the papers cited can take its place in the permanent canon of scholarship. It is in the tradition that has given us whatever we can look upon as solid scientific achievement. These papers do not represent an artificially erected field of interest, but the expansion of familiar techniques into a sphere in which they have not heretofore been applied with any degree of thoroughness. They do not assert that a new way of knowing things has been invented, but only that old ways of knowing can be applied to a hitherto neglected class of objects worth knowing. In this credible assertion is a promise of permanence that the advocates of a science of regions have not been able to give.

We may go a little further, however, than welcoming an advance from the apparently sterile ground of regional description. Scientific concern

[3] Edna Scofield, "The Evolution and Development of Tennessee Houses," *Jour. Tenn. Acad. Sci.*, Vol. 11, pp. 229–240, 1936; Fred B. Kniffen, "Louisiana House Types," *Ann. Assoc. Amer. Geog.*, Vol. 26, 1936, pp. 179–193. These papers are cited together, though the genetic viewpoint is excluded in the latter one in favor of distribution of types.

with cultural phenomena is not new, and guidance can easily be found in what has already been accomplished toward the scientific comprehension of them. American geographers at present in their active years have learned much, directly or indirectly, from the cultural anthropologists. They have learned from their anthropologic colleagues most of the lessons that distinguish them from the generation of geographers that preceded them: that culture can be viewed objectively; that culture has its own springs of development and is not merely a chameleon-like entity that takes the color of the ground on which it momentarily rests. They have learned that culture is time-bound as well as place-bound, and that the time-bond may be more important than the place-bond. These lessons have been learned easily, perhaps because the environmentalism of a generation ago had already, before it was overthrown, become hopelessly bankrupt. But however much he has learned and may yet learn from the anthropologist, the geographer who essays the scientific analysis of the cultural landscape produced under the influence of European culture or its derivatives can not be content with the conceptual tools appropriate to the study of the cultures of non-European and only vaguely historic peoples. We know pretty well the history of our own culture; we can only speculate concerning the history of that of the Maori or the Hopi. The time dimension, in European culture measurable with a high degree of accuracy, makes possible a depth of insight that can not be gained when the past of a culture has to be reconstructed from fragmentary remains.

The history of our culture, a colonial development of European culture, and of the parent culture itself, is to a considerable degree accessible. The elements of our cultural landscapes may be traced back through historical records, through persistences and remains, to dates sufficiently remote to satisfy our demand for the historical type of understanding. European colleagues, who live closer than we to the elements that have persisted from the more remote past, have done much of the work that can illuminate the cisatlantic history of the elements of our cultural landscapes. Who are these European colleagues? Only in limited number are they geographers and economic historians; most of them are the investigators of national and provincial folk art and of the more self-conscious and international art of courts and towns. The history of art, it may be confidently said, provides the largest corpus of instructive literature available to the student of the cultural landscape. Investigation of the history of European art is neither of so recent date nor oriented so exclusively toward the exotic as is cultural anthropology. Its typologies and chronologies have been built up by long study, by elaborate comparison and documentation. It is the best worked out part of the cultural history of Europe.

It grades, of course, into neighboring fields. At the farther end of its historical sequences it merges with archeology, which is largely undocumented art history. As the objects it deals with become more purely utilitarian than objects of art as conventionally conceived, it grades into the history of technology and so into economic history. But whatever be the point within the range of utility occupied by an object studied by the art historian, approach and method remain essentially constant. One is always concerned with the works of *Homo artifex,* of man the artificer, who fashions from materials offered by nature useful objects, so shaped and on occasion so decorated as to satisfy as well as may be his subjective, esthetic cravings. In addition to objects of utility, and by no means only after the demands of utility are met, he fashions non-utilitarian objects to satisfy his subjective cravings alone.

Only a part of these artifacts are, of course, likely to be of immediate concern to the geographer. He will generally have occasion to investigate only those that are quasi-permanent and associated with the land. He will be concerned with dwellings and other structures intended to shelter human beings and their possessions; with roads, bridges, and lines of division of the land; with features molded of the stuff of the earth itself—ditches, walls, furrows; in general, with the *immobilia* among the products of culture and with the patterns in which they are arranged on the ground. But these immobile elements will inevitably call attention to less permanent elements: their connection with tools is obvious, and only slightly less obvious is their connection with cults and with the ornamental treatment of such things as furniture and clothing. Much of the culture of a people at a given epoch is embodied in their quasi-permanent cultural creations, whether these creations be viewed incompletely as objects of material utility or more inclusively as objects that have as well the function of satisfying subjective, particularly esthetic, demands. Quasi-permanence implies attachment to locality, and localization implies regional differences.

Is it too great a strain on long-established and familiar words to call the study of localization of the cultural immobilia with which the geographer is likely to work "topography of art"? Use of the word "art" to signify the products of artistic activity is quite familiar: no one who encounters it in such an expression as "art museum" misunderstands the meaning intended. The once bright and shining but now sadly battered word "topography" remains the best that our language (or any language that has borrowed learned words from the Greek) can provide to designate a lore of detailed localization of phenomena. Despite its immediate implication of more or less uncontaminated description, our long habituation to the explanatory function of scholarship will not permit us to rest content with a

merely descriptive summary of the distribution of anything. No presentation of the topographic distribution of a plant species or of unseasonable killing frosts would satisfy us unless it offered at least a tentative explanation of the distribution. Our habits of scientific thinking add an explanatory dimension to the meaning of any term used to name a scholarly discourse. No violence is done either to language or to the tradition of learning if the expression "topography of art" is used in the sense of scientific discourse concerning the localization of artifacts, however far the attempt to explain this localization may be carried.[4] The topography of art therefore includes most of what is commonly subsumed under such a designation as cultural geography.

TOPOGRAPHY OF ART IN REGIONAL DESCRIPTION

What is gained by making this identification? This: that through looking at regional contrasts in the cultural landscape as local manifestations of creative practises common to a wide area, one comes a little closer to the subjective springs that drive artificer man to his creative work; that one links the investigation of the cultural landscape with a body of scholarly doctrine from which it may learn much methodology and from which it may borrow useful typologic and chronologic concepts; this above all, that one emphasizes the essential time-bond of culture rather than its looser place-bond. Professional students of the history of art have not neglected regional contrasts: I cite in evidence Johnny Roosval's identification of an art region, the Baltic North (as of the Middle Ages), undertaken as deliberately as any geographer ever went about defining a region on any

[4] "We affirm that the word Art means skill, that a work of art is a work of skill, and an artist one who is skilful at making things. It would appear therefore that all things made are works of art, for skill is required in the making of anything."—Eric Gill, *An Essay on Typography* (2nd ed., London, 1936), p. 10. These definitions may well suffice for such a plain-speaking, practising artist as formulated them, who is not overly conscious of the motives according to which he works. Scholarly investigation must recognize, however, the existence of motives (perhaps unconscious) in the mind of the artist and also in the minds of others who accept or reject his artifacts and thereby subject him and his work to a pragmatic test. Though scholarship may not be able to dissect out these motives from the entire complex of culture, it can provide insight into them by establishing similarities and diversities in space, conservatism and change in time, compatibility and incompatibility with other culture traits, and modifications undergone in the process of diffusion, with respect to the products of art.

In calling attention to the fact that the work of the cultural geographer, as he deepens and refines his investigation of the cultural landscape, approaches a topography of art, I have not the remotest intention of adding to an already overburdened terminology.

grounds.[5] The medieval Baltic North was a unit in other cultural respects as well—commercial, for example—but the material remnants used by Roosval in this work, its churches, form as good as a basis for defining it as could be found.

The topography of art can thus be used to attain an end that the regionalist might look upon as intrinsically valuable, but in fact the definition of the medieval Baltic North as an art region is of value principally as signalizing a lively exchange of esthetic ideas within a definable area during a certain historic period. The art region is the geographic expression of a cultural process rather than the cultural expression of a geographic process, as geographers sometimes seem to consider the cultural regions they define. The advantages gained by this emphasis on cultural process are too obvious to require comment.

It is worth while, too, to inquire into the utility of the topography of art as a medium for the characterization of localities chosen for detailed description on any grounds: into the possibility that it may be used instead of systematic regional description to convey factual information concerning the differences between the cultural landscapes of different localities. Its usefulness for this purpose will naturally be most conspicuous when the localities dealt with contain rather massive agglomerations of cultural immobilia: when they are denser settlements such as villages and towns. Such settlements, if at all old, are cultural palimpsests, in the study of which the time dimension can not be neglected. Taking "art" in a generously broad sense, a study of the topography of art with full recognition of time perspective is so close to a morphology of settlement as very nearly to coincide with it. Unless conceived too narrowly, the approach from the viewpoint of the topography of art may, indeed, come closer to the truth of how settlements develop than the geographic-morphologic approach as generally applied. The latter is too likely to lay stress on rational, utilitarian motives in the labors of the inhabitants who, perhaps through centuries, have built a settlement. If the settlement is considered rather as an accumulation of works of art in a broad sense, it appears more as a local and locally conditioned embodiment of esthetic values held over a wide area. Opinions may differ as to the relatively validity of the two views, but if one thinks of the original act of establishing a given settlement, the cultural landscape resulting from the act of establishment must appear as a crystallization out of a

[5] Johnny Roosval, *Den baltiska Nordens kyrkor* (Föreningen Urds skrifter, II, Uppsala, 1924), preface, p. 5; and chap. 1, "Den baltiska Nordens konstområde," pp. 7–12. I have not had access to Roosval's article "Das baltisch-nordische Kunstgebiet," in *Nordelbingen: Beiträge zur Heimatforschung in Schleswig-Holstein* (Hamburg und Lübeck, 1927).

larger regional quasi-homogeneity rather than as an additional cell added to a large cultural region by a sort of spontaneous generation. Pioneers, however meager their material equipment, bring with them into any new country a pretty complete set of subjective, including esthetic, values.

I invite the reader at this point to consider an unquestionable example of the topography of art that has recently come into my hands: Sten Karling's monograph on Narva in Estonia.[6] Narva is a peculiarly attractive object of study for anyone interested in the morphology of European towns. Elsewhere, west-European urbanism may seem to give way gradually to the less distinguished forms in which the town-dwellers of eastern Europe have shaped their settlements. But the older parts of Narva testify that west-European urbanism, with its stricter canon of esthetic judgment, was once as living and creative on the Narova, for long the boundary between West and East, as ever on the Weser or the Elbe. The Hermannsburg of the Teutonic Order faces, across the Narova, the immense, sprawling mass of Ivangorod castle. Enormous bastions built in the late seventeenth century bear witness that the town retained its military importance through and well past the Middle Ages. But the town's most distinctive character derives from the fact that almost every building in its older parts was built during the second half of the seventeenth century. Only an unusual history could give a town so unified a material character as Narva possesses and preserve that character without essential change through two centuries and a half. That history is to be read in Karling's work. The rough chronology of castle, town fortification, and burghers' dwellings that the visitor recognizes at a glance is there traced in detail. It is a chronology of successive waves of influence expressed on occasion in political, military, and mercantile activity, but always in the processes by which norms of esthetic creation and judgment are disseminated. The building material used in the town was native limestone quarried close at hand; but the qualities of this stone determined only to a slight degree the character of the structures into which it was built. Karling traces the sources and channels of the influence that did determine the shapes the buildings possess. In so far as documentary evidence permits, he identifies the artisans who were the carriers of the techniques and tastes that guided hammer, chisel, and trowel during their construction; and where such evidence is lacking he makes shrewd guesses on stylistic grounds.

Karling's work makes no claim to being more than a comprehensive investigation of the architecture of Narva. But more than a history of the "mere" architecture of castle, church, town hall, bourse, dwelling of mer-

[6] *Narva: eine baugeschichtliche Untersuchung* (Kungl. Vitterhets historie och antikvitets akademien, Stockholm, 1936).

chant and artisan, is conveyed. Military as well as civil architecture is represented in the town, and the communal arts of laying out building lots, streets, and market place, and of formulating building ordinances as well. These arts, too, receive the attention due them; they have been diffused, and carried by individuals, in the same manner as have the building arts of more limited scope. A study of the topography of art, the meaning of the term "art" being taken generously, turns out to be a first-rate job of scientific topographic description. The intellectual equipment required by the author in order to do it includes familiarity with a large fraction of the cultural immobilia of western Europe. It includes knowledge of the subjective norms by which these cultural immobilia have been created and judged through seven or eight centuries. It includes as well the scholarly tact that enabled the author to track down the chronology of buildings by means of dry and superficially unrelated entries in the record books of town officials.

What of significance could the professional geographer add to this rigorously scientific account of the monuments Narva's merchants, fortification engineers, carpenters, masons, and stonecutters have left behind them? It is true that Karling has practically nothing to say about the mass of shapeless and tasteless buildings outside the old town, built with reference to the railway; nothing to say about industrial production and freight movement in the thirties of the twentieth century. The Narva Karling describes is the town that grew in accordance with tensions that can not be avoided in a frontier post subjected first to one and then to another among rival empires; in a town where stiff-necked bourgeois pride measured strength with alien political and military masters. After these tensions were relaxed, what was added to the town was amorphous, east-European. Nothing that can demand serious attention from the student either of the morphology of settlement or of the history of art was added to the town after Peter the Great took it in 1704. Karling describes the essential Narva, the Narva that leaves its distinctive and indelible impression on the memory of the visitor. He describes that Narva, not impressionistically, but circumstantially and in the best tradition of a scientific history of art.

THE PLACE OF THE TOPOGRAPHY OF ART IN SCIENTIFIC GEOGRAPHY

Do I seem to be recommending that the geographer turn art historian? That is not precisely my intention. Only a part of the content of the landscape is amenable to the methods appropriate to the investigation of regional and local variants of the art patterns generally current at a given moment, and to the interpretation of the marks left in old settlements by the changes in taste they have witnessed. No one can deny the obvious fact that the

content of the landscape is extremely heterogeneous. If this content is to be subjected to scientific interpretation, methods of investigation must be adapted to the particular class of phenomena a worker selects as the object of his study. The intellectual approach that will yield permanent results in the investigation of the physical components must be obvious by this time: no work will be permanently satisfactory unless it is founded on sound physical theory. The history of meteorology, oceanography, and most recently of glaciology shows the direction in which geomorphology, for example, must move in the future. The physical geographer must in the future be more rather than less of a physicist than he has had to be in the past.

But there are no basic equations of social psychodynamics on which a science of the cultural landscape can be built. In this realm we must be content with the historical rather than the rational type of understanding. That is not to say that we may be content when we have once noted the chronology of accumulation of the elements of the cultural landscape. Each of these elements, as it was brought into existence and added to the landscape, represented the result of a choice among several possibilities. Every choice may have had in part an economic and hence half-rational motivation; but irrational, in a broad sense esthetic, motives always lurk behind ostensibly rational choices. It is primarily the history of art that has traced and named the shifting currents of esthetic judgment. The topography of those products of artistic creation that become part of the cultural landscape forms a reasonable nucleus about which work in cultural geography may crystallize.

We should, if we adopted the attitude advocated here, inject a rather unfamiliar emphasis into our contemplation of the inescapable relation between nature and culture. Despite all protestations to the contrary, many objective discussions of regional economy in geographic literature have tended to intimate that the inhabitants of a region yield more or less passively to imperatives residing within nature. Yet this point of view can not be wholly satisfactory. At least the inanimate elements in nature are always passive with respect to mankind; the active partner in the interaction between nature and culture is always the individual or the group that insists, with such energy as it can command, upon imposing on nature forms of settlement and exploitation that frequently can be established only by dint of much labor. Much of the labor thus expended is, from any rational viewpoint, expended in vain. Automobiles grind painfully in low gear up and down precipitous—but fully built-up and inhabited—streets because when a town was laid out a rectangular pattern of streets was insisted upon regardless of the relief of the site. At vast expense a broad highway, with

easy grades, is built into a mountain fastness in order that some scenic attraction may be made easily accessible to the motorist. The catalog might be prolonged indefinitely. We have in these phenomena—and they are only extreme examples of the characteristic manner in which culture, through technology, imposes discordant forms upon the landscape—no passive yielding to nature, but an active, often violent, subjugation of nature to cultural uses; uses that are sometimes rational, but at least as often irrational.

If this point of view is adopted, there are no intolerable disharmonies between cultural and natural elements in the landscape; for almost any kind of cultural product may be set down in any natural setting. The Negus's automobiles shuttled back and forth over the few kilometers of passable road in the vicinity of Addis Ababa. Roses—and even palms—are cultivated indoors beyond the polar limits of barley or potatoes. A Rhenish castle may look down upon the Columbia. We may make room in our minds and in systematic scholarship for all the apparent vagaries of which culture has shown itself capable. The vagaries may, perhaps, set us our most attractive problems. For they represent in pure form the power exercised by subjectively held values over the deeds of mankind. The biologic doctrine of adaptation, a physical and hence rational principle, was the progenitor of environmental determinism. But culture is not a biologic function: from any rational point of view many of its products are monstrosities. Once its apparently unlimited capacity for irrational creation is accepted, we can work patiently toward a historical understanding of anything it has contributed to the landscape. I arrive again at the conclusion that if the components of the cultural landscape be looked upon as works of art a way is opened that leads toward such understanding of them as we can hope, with our present intellectual equipment, to achieve.

To sum up:

Systematic regional description has its uses, uses similar to those of lexicography. Like lexicography, it has its own problems and its own techniques for solving them. It seems to me, however, that it can scarcely become a program for any considerable body of scholars, nor reasonably claim a place in the academic world. Facts about the old settled parts of the earth that go into systematic regional descriptions do not come at first-hand from a single class of investigators, but from a whole wide range of sources, conspicuous among which are the governmental agencies that have their own machinery for collecting facts. The highest synthesis of discrete facts concerning regions is artistic, since the synthesis can be made only subjectively, not rationally. There will always be a place in civilization for the artist in topographic description, a place comparable with that, say, of the artist in biographic narrative. But an art of topographic description can not

claim a place among the sciences. Science can deal with phenomena only after sorting them into groups within each of which there is mutual commensurability. That means that the content of the landscape, before it can be comprehended scientifically, must be sorted into such internally commensurable classes. Physical theory provides the key to the rational comprehension of some of these. The elements of the landscape that have a cultural origin, at the creation of which subjective motives stood sponsor, can not be understood rationally, but only historically. The key to the historical understanding of the cultural elements of the landscape is, I think, to be found in the methods and results of investigation of the material products of artistic creation.

University of California,
February, 1937.

Soil and the People

CHARLES E. KELLOGG

Civilization depends upon agriculture. Early man was a ranging nomad, constantly changing his abode from landscape to landscape, ever keenly distrustful, necessarily watchful, and prepared for conflict. He took his environment as he found it, living off the land entirely as an exploiter, with no effect to alter Nature or assist in the production of her bounties. The birth of primitive agriculture was the birth of civilization; and with it there came a great change. The plow replaced the sword and man worked with Nature, not to steal but to sow. As a farmer, man himself became closely attached to the landscape, firmly rooted to the soil which supported him. He learned to cooperate with Nature and adapt his ways to her ways. The happiness and security of a people depend, to a considerable degree, upon the success with which they effect this cooperation, individually and collectively.

THE PLACE OF SOIL IN THE NATURAL LANDSCAPE

Any natural landscape is produced through the operation of climatic, geological, and biological forces acting in time. All living things, including men, are products of their environment and genetic heritages. It is especially the biological forces which give those characteristics to a landscape that are of most importance to man. The soil of the landscape represents the sum total of all these forces, biological and physical. Essentially all life, including that of man, depends upon the soil. Functionally, the most important thing about a soil is its productivity for plants. Those characteristics which make the soil productive are themselves due to the operation of biological forces, particularly of native vegetation. No life without soil, and no soil without life: they have evolved together.

In the natural landscape all factors are interdependent. There is a relationship between soil and vegetation, between soil and climate, between climate and vegetation, between soil and parent rock, between soil and slope, and even between climate and slope, but all these factors cooperate in the production of an actual soil. The soil is the final synthetic expression of all these factors working together, and by which the nature of landscapes can be characterized, better, more directly and completely, than by any other factor or combination of factors. From this point of view the soil may be said to have internal and external characteristics: associated with a certain *internal* structural and chemical constitution are external characteristics of

climate and physiography. That is, the words Chernozem, Podzol, and Laterite, connote a certain natural landscape as well as an internal soil morphology.

Although there is a vast number of possible combinations of these climatic, geological, and biological forces, and a vast number of soil types, these can be grouped conveniently into a smaller number of great soil groups, each having particular characteristics of fundamental significance to the development of man. Each offers certain possibilities and each has rather definite limitations. The life of individual men, the general structure of social organizations, and the general course of civilization are necessarily different in these broad landscapes. Laws and customs, as well as agricultural practices and implements developed by adaptation and experience, are dependent upon the demands of the soil and differ in different landscapes.

THE RELATION OF AGRICULTURE TO SOIL

The fundamental physical fact of agriculture is the relationship between the plant and the soil in which it grows. From the accumulation of experience and knowledge, man gradually learns to cooperate with Nature in such a way as to reduce the hazards of life and lessen his direct dependence upon the natural environment. But no matter how complicated become our techniques, social or individual, the fundamental fact remains. The very responsiveness of soil to technique is one of its unique characteristics, individiual and finite. Unconsciously man adjusts himself to these physical requirements. His daily life, his work and his play, from the simple acts of life to the more complicated economic mechanisms he creates, are conditioned by the necessities of his landscape.

The needs of civilized man extend beyond what Nature, unassisted, can furnish him. He must plan and sow—he must work with Nature and conduct her producing forces through carefully organized channels. Thus it is through the use of techniques that civilized man produces his particular necessities. These techniques can be roughly divided into two categories. First there are those simple methods carried on by the farmer and his family. For centuries these have developed according to the general soil regions in which the farmers found themselves. Changes and improvements have been made, of course, and especially in the exactness with which the practices are applied to different soils. But on the whole, the techniques employed on the self-sustaining, non-commercial farms have developed very slowly.

The second class of techniques includes those more directly dependent upon the collective effort of the social group as a whole—the social tech-

niques. These are determined by the state of knowledge, general attitude, and basic interests of the group as a whole. The social group as a whole must be adapted to the soil, just as the individual farmer must be, or its individual members may find themselves quite helpless to adjust their separate enterprises to their own land. As an example, one may consider the farmer on the sloping red lands of the South. He has grown corn and cotton on these lands, encouraging soil erosion, not so much from choice as from necessity. Through collective effort, it may be possible and feasible for the social group, as a whole, to accommodate itself to the soil and other natural resources of the area, thus making it possible for the individual farmer to adjust *his* enterprise according to the capabilities of his own soil.

These two classes of techniques are not mutually exclusive, of course. To the extent that agriculture becomes commercialized rather than self-sustaining, the techniques may become more complex and the welfare of the farmer more dependent upon industry and the collective activities of the social group as a whole. Certain soil regions, such as the Chernozem and Chestnut of the American Great Plains or of the Russian steppes are necessarily more dependent upon collective effort and social organization than other regions. Railroads and power machinery have been more essential to the farmers on these soils than of those, say, of New York. Sharp lines can not be drawn: the modern techniques used in fruit production are vital to the present use of many soils in New York, but the point is that a self-sustaining, independent agriculture is more nearly possible in New York than in western Kansas.

Cooperative marketing, drainage, irrigation, and the use of railroads, power machinery, and chemical fertilizers are obvious examples of such collective effort. Man, acting as an individual, can not easily supply water to desert lands. At the same time he may not be able to provide land with the necessary low cost of fertilizer. Organized society can do it. The establishment of long-time land tenure requires the interest of the social group. Cheap electric power for the farm is to be had only through the collective effort of many people. To these examples, there might be added many more. Now, if our farmer on the rolling red lands of the South should find himself in a social group where long tenure of the land is possible, with devices for long-term agricultural credit, other devices for furnishing cheap fertilizer and cheap electric power, he has a chance to adapt his enterprise to the soil and use it without erosion.

From the soil, man expects first of all his food. The primitive farmer must take whatever Nature gives him, and like it. With the advancement of knowledge and improvement of techniques man is able to improve the products of soil according to his requirements and taste. It is well known

that the composition of the diet has a definite influence upon disease, health, and the physical formation of both animals and men. The minerals necessary for the growth of both plants and animals come from the soil. To a considerable extent man's food owes its nutritional value, especially in respect to minerals, to the soil.

Although food plants can not tolerate extreme excesses or deficiencies of elements necessary to their nutrition, there is a wide latitude of variation. Especially significant variations may occur in the content of other elements, not essential to plants themselves, but of great importance in determining their value as foodstuffs for animals and men. What looks like good wheat may contain toxic quantities of selenium. What looks like good lettuce may be deficient in iron or copper. Pasture grasses of excellent appearance may be deficient in cobalt or nickel.

CRITICAL ELEMENTS IN SOILS

Calcium and phosphorus are of particular importance to the growth of human beings. Extreme cases of poor health due to a deficiency of phosphorus have been reported from areas in India and China, especially among women and children. Susceptibility to other diseases may be induced through poor nutrition long before a direct effect is noted in the outward appearance.

Each of the great soil groups is characterized by certain general levels of plant nutrients. The podzolic soils of eastern United States and Western Europe, the principal seats of the Western civilization, are generally low in phosphorus, calcium, and the bases generally. In the Chernozem region these elements are generally plentiful although other elements, like iodine, may be deficient.

Taking the United States as a whole the matter of phosphates in the soil and consequently in food plants, is of special concern. Recent researches in several states prove conclusively that soils deficient in phosphorus and calcium are frequently responsible for low milk yields and diseased cows. Adequate supplies of phosphorus in the soil are generally relatively less abundant than are most other mineral elements. The replenishment of that removed from the soil must come through fertilization; it can not be replaced from the air like nitrogen, or from the continual weathering of underlying rocks and incorporation in the soil as erosion slowly removes the surface as is the case with many other elements, because the rate of supply from this source is not equal to the rate of its consumption by the selected crops.

Besides the effect upon health and disease the composition of the diet has definite influences on the physical formation of both animals and men, who may be regarded as the finished products in the evolution of a land-

scape. The different races of men seem to have developed in restricted localities each having particular soil conditions as far as the minerals available for plant growth are concerned. Those individuals who survived, over a period of many generations, were those able to adjust themselves to an iodine shortage, a phosphorus shortage, an excess of common salt, or whatever local situation obtained. These adjustments call for others; and a distinct physique develops. For example, some attribute the small size of the modern Japanese, as compared to his medieval ancestors, in a large degree to the low content of calcium phosphate in the diet for many centuries, especially since it became fashionable to eat polished rice.

As a more convincing example, perhaps, may be cited the Jersey cow developed on the Island of Jersey. The soils, and consequently the grasses, of this region are generally low in calcium and phosphorus. As the animals were selected for milk production, under such circumstances, the ability to conserve calcium phosphate had survival value. In response to this environment the animals developed a small fine bone, requiring a minimum of this substance, but, at the same time, offering a large surface for phosphate storage in proportion to the total amount in the body. When, however, Jersey cows have been grown in areas having soils especially rich in calcium phosphate, as in certain sections of Kentucky and Tennessee, the animals have developed large bones and become distinctly off-type.

Race is thus a product of the landscape. People may move but a race is rooted to the soil. The "strong race" has come into physical and social equilibrium with its own landscape. The great civilizations which have made their mark in world history have, for the most part, originated in a particular landscape: the Egyptian in the valley of the Nile; the Arabian in the semi-desert, the Classical on the Red Soils; and the Western on the podzolic soils in the forests of Northern Europe. The Chernozems of the great steppes have not yet given rise to a distinctive cultural type. The development of railroads and other products of modern science are essential to the use of these soils for agriculture, and they have become an important factor in world history only recently. There are evidences in many places of a fundamental clash of opinion between the people of the Chernozem on the great steppes and those of the forested podzolic soils: the outcome is uncertain.

CITY CULTURE AND THE SOIL

During the early life of cultures, people are close to the land and Nature. The seeds of great cultural ideas are germinated in the nursery of undefiled natural landscapes but their final fruition, their crystallization into dogmas and styles, takes place in cities. The towns of a young culture develop in

response to the needs of self protection and as an expression of the communal instincts. But cities gradually emancipate themselves from the landscape and grow apart from the soil as a self-conscious offspring, a creation of unrooted men who have lost their contact with the soil and landscape. In the city invention replaces philosophy, the cathedral replaces the church, the delicatessen the garden, the night club the home; in short the city is sterile, biologically and spiritually. Later these cities, built by the wealth and sons of the soil become dominant and make economic and social arrangements to their own liking. If such policies prevent the normal relationship of the farmer to the land, the cities plant the seeds for their own certain destruction.

The man who sows does not steal: he produces. He is the fundamental "conservationist" in the only sense that the term has any meaning. The "art of agriculture" is inseparable from the "art of home-making." Homemakers are savers, but men *away* from home, and especially homeless men, are wasters. Gradually the cities sap the vitality of the country. The substitution of the "business of farming" for the "art of agriculture" signifies the first encroachment of city ways into agriculture itself. The land and the home of the farmer becomes "capital," paying taxes and interest at ever increasing rates.

As the cities grow they gain power over the country people; and *if* that power is used to throw them out of equilibrium with the landscape there is a decline in soil productivity associated with an inevitable train of social disorders. People say there is an "agricultural problem."

If the city ruins the country people, their own destruction follows. A general decline in soil productivity is the *effect* and not the *cause* of a cultural decline. The effects of soil exhaustions are temporary: *Nature* is quite able to take care of herself after she has punished the men who will not or can not cooperate with her. The important thing is the loss of human spirit, for the effect on people is not so easily adjusted, once the damage has been done.

Although wasteful exploitation of agriculture has happened many times, it is not inevitable or necessary. The early Chinese, the Egyptian, and *possibly* the Western cultures were less wasteful than the Classical, Indian, and later Chinese. Up to now agriculture in northern and central Europe, on the whole, has fared better under the city control of the Western culture than under many previous cultures. In America agriculture has been unconsciously exploited by the cities, with their city "laws." Whether a serious concern for the welfare of the whole nation, of both city and country, will force a change, or whether this exploitation of the soil and farm will continue toward a destruction of both, is a matter of speculation. Although

the productivity of the soils of the United States is still high, deterioration has been significant during the past one hundred years, and the future of our agriculture is unpleasant to contemplate while this tendency continues unchecked. Even more harm has been done to the spirit of large sections of the rural population.

Perhaps we are at a turning point. During the immediate past many citizens, and especially those concerned directly with agriculture, have become aware of the problem. It has been found useful and practical to employ cooperative devices, both locally and nationally, to establish a better adjustment between the people and their land. If these devices continue the adjustment of social techniques to the natural landscape, already begun, the farmer will again have a frame of reference within which he can develop his home. The ends of conservation, of both soil and people, can thus be realized.

Whether the people of the Western culture can accomplish these ends, can reestablish the necessary adjustment between the soil and the people which obtained before the Industrial Revolution, is a challenge to our American institutions. History shows that when this adjustment between soil and people is destroyed the culture declines and the race deteriorates. Then other, better adapted races may rise to power.

Washington, D. C.,
December, 1936.

The Role of Soils in Geographic Interpretation

W. ELMER EKBLAW

During the last quarter century, the study of soils has risen to the status of a distinct science. By the arrangement of its facts and principles into an orderly and systematic classification, in which inherent qualities based upon local factors of genesis and distribution constitute essential criteria, soils science has recently achieved general recognition. Just as during the preceding quarter century, ecology won its distinctive place and function in biology, so soils science is now rapidly taking its rightful place among the scientific disciplines, and extending the application of its discoveries, in a multiplicity of directions, into fields where hitherto its service has been more or less doubtful and confused.

In the directions toward which it is turning, the fields into which it is entering, geography stands among the first. Much of the fundamental fact of the new soils science is concerned with the attributes of place; and place relationships play no small part in the body of knowledge which has been accumulated through the centuries and which is now being so systematically arranged according to the new soils discipline. Just as the ancient disciplines of physics and chemistry and biology and geology are being invoked in the service of soils science in its rapid development, so the discipline of geography, its technique and principles, are being utilized on a large scale by soils scientists in the solution of their problems.

Like geography, soils science overlaps the borders of many related fields, geology, biology, and chemistry, for example, some of them of quite fundamentally different disciplines from its own. It is in that overlapping borderland of geography and soils science with which we as geographers are primarily concerned. We are all the more deeply interested in the association of geography with soils science because of the intimate connection we have had with the formulation of its principles, through some of the members of our own group, particularly the late Dr. Curtis F. Marbut, not long since President of our Association, and who, more than any other one man, gave definite form to soils science.

Soils play two important roles in geographic interpretation: their direct role as factors in the geographic complex, or environment, or region, as the case may be; and their indirect role as an expressive resultant of many or most other geographic factors which affect the pattern of human occupancy, the character of land use, or the composite landscape in any region.

INDIRECT ROLE OF SOILS

In their latter role soils represent the effect upon their parent material of geologic structure and composition, and of land form and relief; the effect of the several elements of climate; the effect of plants and vegetation, of animals, of microorganisms within the soils themselves; and finally of the manifold activities of man, who drains them, irrigates them, grows his crops upon them, lives upon them. No other single phenomenon, or even group of phenomena, of the geographic complex, indicates so well the effects of many diverse and essential elements. In this role they afford the geographer the clearest clue to the solution of some of his problems, often the proof of a thesis which he sets up to explain relationships within a region.

Soils have a distinctive value in indicating the composite or aggregate elements in a geographic landscape, that none of the other elements possesses, for they represent the effects of so many of the geographic forces working upon them. Land form is not nearly so serviceable as soils in this role, because it has resulted too largely from past and in large part, conjectural or unknown, geologic forces, both in the structure and composition of the rocks from which they are derived and from past dynamic agencies producing them. Climate affords no such satisfactory indicator as do soils because it is ultimately dependent upon extra-terrestrial forces.

Plants and vegetation have even less value than land form and climate, because they possess the vital quality of adaptation within themselves, a variable that leads to confusion of interpretation. Because animals, like plants, possess within definite limits, the same power of adaptation, though chiefly of the genetic group rather than of the individual, and in a much greater degree the quality of mobility, they are even more difficult than plants to use in geographic interpretation.

And man with as great range and variety of adaptation, as great mobility as plants and animals, possesses still another quality,—the power of volition, which enables him even to change wittingly and in major aspect, the whole character of the geographic complex or landscape; hence man's distribution and his activities constitute such a complicated element that no complete and final geographic interpretation may be based upon them.

Soils, on the other hand, have no power of movement, and consequently they must submit to all the forces and changes affecting the places they occupy; within themselves they have no power of adaptation such as the vital power all animals and plants possess; they have no volition as man has; they are little affected, except through the climate, by solar influences; they are too recent to represent in any significant way the forces of the long geologic past which land form and parent material so profoundly reflect.

Whatever a soil is, it represents almost solely, and almost *in toto,* the contemporary effective phenomena dynamic in any given place, or in any delimited region; for in the last analysis a region is but a group of places possessing similar, or the same, attributes, or groups of attributes, delimited or determined by certain criteria upon which the boundaries of the region are set.

As such, soils offer the best single natural basis for the classification of geographic phenomena, that is, of the attributes of place in any region. The distinctive character of the soil profile and its attributes in any given region represents the largest number of the forces producing the landscape of that region. More nearly than any other natural element it approaches the goal geographers have been seeking, some one quality or constituent which may be mapped, and which shall represent upon a map the largest number of attributes of the region.

Soil Maps. Whether or not the maps which soil scientists for many years prepared for their own use, or for the use of agronomists and farmers who are primarily and almost exclusively concerned with the crop, pasture, or forest-producing capacities and qualities of the soil, are completely satisfactory for the purposes of the geographer, remains to be determined; but certain it is that whether or not they are as serviceable and applicable as they can be, the soil maps available—and in the past they have nearly all been prepared primarily for agricultural purposes—do afford an extremely valuable tool for the geographers' use. If they should prove not so fully satisfactory as we should like them to be, it is because they have been prepared for a different, though closely related use, and have been based upon criteria which are not in some cases useful to the geographer, and not because the soils they graphically represent are not capable of more satisfactory mapping upon a strictly geographic basis more to our liking and need, applying criteria which differentiate them more effectively for geographic interpretation. Fortunately, as complicated as our United States soils maps are, as difficult of use as some of us find them, they almost invariably present the data we desire; and by a little skill in adaptation and modification we can make them yield results of utmost significance and value. In addition they are, almost without exception, of extraordinary accuracy and authenticity of detail. Except for highly localized or specialized application, they suffice for most geographic purposes. Recent maps, prepared objectively in conformity with modern practice, and solely on the basis of the inherent qualities of the soils, emphasize the improvement the Soil Survey has achieved in its surveys in late years.

DIRECT ROLE OF SOILS

In their more direct role as factors in the geographic complex which every region, every landscape, represents, soils may be employed most advantageously if the soil type be used as a major criterion of regional attributes. The broad climatic divisions of soils—the laterites and the podsols, the pedalfers and the pedocals, the chernozems and the solonetzes, for instance—bear implications of the most profound geographic significance, more definite and more expressive than the great major vegetation types and formations which for half a century now have opened so many new avenues of research, and have suggested so many new interpretations of physical and human relationships.

That the laterites, as generally understood, represent soils leached of much of their fertility and lacking in humus, are incapable of sustained yields; that the podsols are so acidic as to support only definite kinds of vegetation and crops, and that a hay-and-pasture economy characterizes some of them; that pedalfers imply adequacy of precipitation for variety of crops and general type of farming, other things being equal, and that pedocals imply inadequacy or untrustworthiness of rainfall, or both, for many kinds of crops, and certain types of farm management; that chernozems are exceptionally fertile, and when well-watered, potentially productive of high yields of grain; and that solonetzes tend to develop impermeable hardpans that restrict the variety of crops grown upon them,—all these implications are but illustrative of the manifold interpretative means that the major soil divisions afford.

As yet the rank and file of our geographers are only superficially or casually acquainted with the characteristics of the major soil classes and the many possibilities for use that they offer. The new soils science is advancing so rapidly that our profession can not hope to keep up with all its discoveries, and attend to its own progress as well; yet we must endeavor to incorporate into our science and research, the new wealth of knowledge which soils science is accumulating in that borderland where geography overlaps upon it, and introduce into our methods the part of the technique of soils science that may aid us in our own methods, that may facilitate the solution of our own problems.

Just as the several soil types may prove of superior value as criteria by which to organize more effectively our own body of fact, so the several attributes of place expressed by the various qualities of the soil profile may play an important part in our geographic interpretations. The thickness, the color, the compactness, the structure, the texture, the chemical, mineralogical, and biological composition, or any, or all, of these in relation to one another, of the several horizons that constitute the profile, have their dis-

tinctive, generally correlative, part to play in revealing the attributes of a region.

Thus the relative thickness of the humus-rich horizon of a chernozem may indicate the luxuriance of the vegetation growth that the climate of a region may sustain, and the average abundance of crops forecasted for that soil; or the compactness of the B horizon may determine whether or not a soil is adapted to the growth of roses or onions, timothy or redtop, alfalfa or alsike; or the biological composition of a soil horizon may indicate whether it be too acid for sugar beets, or too alkaline for potatoes.

The base exchange capacity of bentonite, beidellite, or montmorillonite may be of interest in themselves only to the mineralogist or the physical chemist, but when related to soil compactness, to waterholding capacity, or to state of tilth, and thus to productivity, they become of impelling interest to the geographer. The regional abundance of microörganisms in the several horizons of the soil profile may be of interest in itself only to the microbiologist, but when it is related to the quantity of nitrogen and thus to the fertility of a corn- or cotton-field it becomes of paramount importance to the geographer who would lay the foundation for a rational system of land planning. The fact that a soil is a chernozem, or a solonchak, or a podsol may be of interest in itself only to the soils systematist, but when it is translated into yield of wheat, or flax or pork, and thus indirectly to the health and welfare and happiness of a people, it assumes unexpected geographic significance.

The steppe lands with their chernozem soils have become the great granaries of the industrial world, with its great need for wheat and flour and bread. The solonchaks, refractory soils that require patient attention, are in many places subdued to man's plow and harvester with pioneer growth of flax. The podsols, with their dairies, their creameries, their cheese-factories, yield plentiful supplies of skim milk for swilling swine and fattening them to bacon and lard requirements.

The new soils science is yet only in its infancy; much of the knowledge by which it is advancing, is gained through research by the host of Russian soils scientists whose results are, and have been, only in small part, and quite inadequately, accessible to us because of language barriers. The concept of soil as a distinct natural entity apart from its geological, chemical, or agronomic relationships has not yet been generally grasped. These two reasons explain, in large part perhaps, why our geographers have not more generally made use of the new body of available knowledge, the new soils science technique.

It is not only that we must grasp the concept of soils as a distinct natural group of physical organisms with their own definite genetic development,

their own peculiar cycle of evolution, their own inherent qualities separate from the parent material of which they are formed, and other distinct phenomena that produce and affect them, but we must also grasp the equally important concept that soils are almost as essentially organic or biologic in their genesis, their character, and their functions, as they are inorganic, mineralogical, or purely physical. Their organic constituents are as important, are in one sense just as much a part of their parent material, as the glacial till, the loess, the alluvial sediments, or the country rock upon which they form. It is this dual character of their parent material that makes them so comprehensive of geographic meaning—they represent well nigh the aggregate of regional factors in any one place.

Summary. This paper does not purpose to summarize the entire relationship between the knowledge and discipline of the new soils science and those of geography; its chief function, as the title indicates, is to attempt to outline briefly, and only in its most salient features, the role of soils science in geographic interpretation. While it is important that we, as geographers, should make the utmost use of soils science and soils discipline in that portion of our fields which we till in common with students of soils science, it behooves us not to claim too much for the possible utility of our studies, the possible applications of our methods.

The public seems ready and prone to expect too much of us, more than the present state of our sciences warrants, and we must not pretend to be able to do more than we can, more than we are sure we can accomplish, or we may suffer serious loss of confidence and respect; and our usefulness may be impaired and our reasonable progress jeoparded by failure of public support. Conservative claims, cautious application of our principles to controversial or doubtful problems, and above all, modest publication of our results, must characterize our attempts to engage in public problems. It is vital that we should be acquainted with as much of the new science of soils as relates to our field and as we possibly can, or we shall certainly be unable to keep pace with its rapid progress, and its increasing value in the solution of our own problems.

Clark University,
April, 1937.

Round Table on Problems in Cultural Geography*

In May, 1936, a group of geographers canvassed the desirability of having a general discussion of problems of cultural geography. In the ensuing months Stanley D. Dodge undertook to arrange such a round table and to serve as its chairman. Several members of the Association were asked to present the culturo-geographical problems of areas in the United States with which they were considered to have special familiarity. The topics submitted by them did not reveal sharp antithesis of opinion but suggested divergence enough to engender discussion. The following program was made the order of the evening.

The Rocky Mountains, by Wallace W. Atwood.

1. The rise and decline of mining towns.
2. Social and cultural life in agricultural towns among the mountains.
3. The preservation of the primitive.
4. Recreational life in the national forests and national parks, in city and state reservations.

The Great Plains, by Ralph Brown.

1. Regional subdivisions.
2. Land classification.
3. Population movements.
4. Depiction and analysis of occupance patterns.
5. Relative magnitude of cultural alterations of the environment.
6. The significance of irrigation.
7. Attack through chorographic studies.

The Lower Mississippi, by Fred B. Kniffen.

1. Composition and delineation of the several culturo-geographic areas.
2. Changing patterns of agricultural occupance.
3. Old river ports.
4. Changing road pattern.
5. Temporary exploitive occupance.

The Great Lakes, by Robert B. Hall.

1. Detailed reconstruction of the process of settlement.
2. Detailed local culture histories.
3. Detailed studies of the distribution of population, of the growth of population, of the decline of population, of the time of

* Convened at the meeting of the Association of American Geographers, Syracuse, New York, on December 31, 1936.

population peaks, and of changes in the rate and direction of growth.
4. Detailed integration of such studies as have been made already, with the inclusion of new studies as rapidly as they appear.

New England, by Derwent Whittlesey.
1. Population studies.
2. House types.
3. Types of towns, as examples of geographic entities.
4. Sequent occupance.
5. Administrative organization.

An abridgment of the reports and the ensuing remarks, taken stenographically as the round table proceeded, is here published. Except for Professor Kniffen, the speakers, as well as the commentators, spoke informally, from notes.

S. D. Dodge.—Problems in geography from the very nature of the subject require individual solutions. In many sciences, techniques for the solution of problems have to be developed as progress is made towards the solution. This is true, in large measure, of geography. This individuality of solution and methods varies not only with particular problems, but also with regions, since each landscape is probably unique. As a consequence a regional approach to a discussion of the problems seems advisable. It is for this reason that various regional specialists have been asked to present their ideas concerning the problems in those areas of which they have particular knowledge.

No serious attempt has been made to have representatives of each minor division of the North American continent; the scope was limited primarily to the United States, and it was hoped that representatives of most of the major regions of the country might be found to speak. This has not proved possible. In the end it was necessary to limit the field of discussion to five regions: (1) The Rocky Mountains; (2) The Great Plains; (3) The Lower Mississippi; (4) The Great Lakes, and (5) New England.

I shall ask President Atwood to begin the series of talks on cultural geography of regions. President Atwood!

THE ROCKY MOUNTAINS

Wallace W. Atwood.—The Rocky Mountain province is more than a land of mountains. There are indeed many distinct mountain ranges of great scenic beauty, but in this physiographic province there are several large lowland areas such as the Big Horn basin, the great valley of the Wind River, the Wyoming basin south of the Wind River mountains, North Park, Middle Park, South Park, and San Luis Park. To the east are the Great Plains and to the west the high plateau.

To the geographer interested in cultural studies this region offers many good opportunities. He could take up the study of the ruins or pre-historic peoples that inhabited this area and possibly make an important contribution to archeology. His co-operation with the archeologists would be much appreciated and it is exceedingly important for us as geographers to have an historical point of view in many of our studies.

A study of the adjustments of the modern Indians, living in this part of the country, to their environment is a timely subject for investigation.

The movement of the frontier of white settlers through this mountain province offers many attractive opportunities for cultural studies in the Rocky Mountain region. The life of the early ranchmen, of the early farmers, the story of the prospectors, the establishment of a mining camp, or the rise and decline of a mining town would furnish to a geographer excellent material for bringing out the relationships of people to the natural conditions in the regions where they attempt to make a living.

There is a very dramatic story associated with the conflicts between the sheepmen and cattlemen who settled in this province, and it is all tied up with the division of the lands among the settlers, or the best or fairest plan of land utilization.

There is one other study which I wish to suggest and that is of the value of the primitive beauty of the mountains to the people of this nation. The wealth of forests, of grasslands and of mineral veins are as nothing in the long run to the esthetic values of this landscape. If a geographer could point out to the people of this nation the values of the primitive beauty of a wilderness area, he would render a valuable service.

S. D. Dodge.—I have asked Professor James to comment on the outline of the Rocky Mountain area which Professor Atwood has given. First, let us hear from Professor Huntington.

Ellsworth Huntington.—I am particularly interested in knowing what has happened to the irrigation communities scattered throughout the Rocky Mountains during these years of drought. Has the drought on the other side of the Great Plains done anything to the irrigation regions? What effect has it had on them? Has it helped or hindered them?

S. D. Dodge.—Shall we leave questions of that kind until Dr. Atwood can answer them all at once? Mr. James!

Preston E. James.—A few years ago we held a symposium in which we attempted to define some of these terms. Among other items we undertook to define the word "Landscape." I protested against what seems to me the false separation of the cultural and the natural landscape—or the division between human and physical geography. This traditional separation has, I

believe, imposed a distinct burden on the clarity of geographical thought. As a matter of fact there is only one landscape: the human aspects are not separate items, but rather parts which, in intimate connection with all the other parts, form a closely organized whole.

As we consider the landscape of the Rocky Mountain Region we should recognize that land and occupance can not be taken apart without destroying or modifying the whole. But if we are to understand the landscape of this or any other region, we must follow the analytic method—we must take the landscape to pieces, so to speak; however, in so doing we must not forget that it is a living, growing organism only when it is put together again.

If our interests are primarily concerned with this region as a home of man, we might well start with the present-day distribution of people. In order to interpret this population pattern we must give careful consideration to a number of other factors. In the first place we must understand the various modes of occupance which have been operative in the region. Dr. Atwood mentioned a number of these: ranching, gold mining, lumbering, irrigation applied to specialized crops. Each of these modes of occupance develops a pattern of population which is related differently to the other elements of the Rocky Mountain landscape. Each pattern is distinct in kind, and also distinct in time. There is an historical sequence of modes of occupance and resulting patterns.

How far back into the past must we as geographers carry our investigations of these patterns? Should we go back to the pre-European inhabitants, as Sauer is doing in Northwestern Mexico? I can see no reason for such studies unless it can be shown that these earlier modes of occupance and resulting patterns have in one way or another, directly or indirectly, had some effect on the present-day landscape. I don't know whether the distribution of pre-European cultures has had some effect on the present situation in the Rockies—I know it does have a definite effect in parts of South America. If it has such an effect it must be included.

But the historical sequence of modes of occupance is by no means the whole story. The various items which may be included under the general heading of "the land" must also be treated. If the Alpine scenery of the Rocky Mountains has some connection with the present distribution of people, then Alpine scenery must be given adequate treatment; but if it does not have such connection it should be rigorously excluded—even if the geographer's physiographic training arouses his interest in glacial features. It is impossible to conceive of a study in which the population was not in some way related to some feature of the land, even if it is not scenery. Soil, the distribution of the types of natural vegetation, the rainfall and exposure to sunlight, the minerals, and also such man-made features as roads or rail-

roads must all receive careful treatment in terms of mapped distributions. In each case the problem of what to include and what to omit must be solved by the importance of the item in contributing to an understanding of the present-day distribution of people. In this way the geographer makes a contribution which none of the other social sciences can make, for he keeps returning to man as a part of the whole landscape, not as an isolated, unrelated phenomenon.

Kirk Bryan.—If we consider this Rocky Mountain country at the present time, it is obviously overpopulated. If you will look up the statistics you will find that every one of these states has a larger percentage of children under five years of age than are necessary to reproduce the population. The State of Utah is the greatest center of potential population, having 625 per thousand females of child-bearing age, when 376 is adequate to reproduce the population. I think no optimist can believe that all these children can find a place to make a living in the State of Utah. If we consider all of the States from the Great Plains west to the Sierra, the whole of this great country is overpopulated. If we are going to map the occupance, we should do it now, and not wait five or ten years, when the full effect of modern conditions will have rearranged the population. There are more white men's ruins in Western United States than there are in Eastern United States. More experiments that have been failures have been made on how to make a living than in any other place I know of. There are, even yet, many people living in the experimental localities who are going to be starved out in the next generation. Our problem in Western United States, from a cultural standpoint, as I understand it, is to find some means of transportation, some habit of migration for the excess population.

S. D. Dodge.—Professor Bryan's remarks, I think, bring up some points which we might well reserve for later discussion. Let's now turn to the Great Plains. I will ask Professor Brown if he will outline what seem to him to be the major problems in cultural geography in that area.

THE GREAT PLAINS

Ralph H. Brown.—In preparing my summary of the problems of the Great Plains I attempted first to see the province in its larger delineations, and that suggested the question of regional and subregional delimitation. It might be argued that regional delimitation should be reserved until numerous type studies had been made. On the other hand, it seems desirable to have at the beginning a rough, tentative outline of the possible subdivisions, to be corrected as experience in the field makes necessary. In setting out to subdivide the Plains into component parts, we must appreciate and have regard for the more or less acceptable subdivisions of their various

elements already available. An early number of the *Annals* contained a series of Great Plains articles in which the vegetation, soils, and agricultural regions are outlined. The nearest approach to useful regions of the cultural type is the coarse classification of agricultural regions advanced by O. E. Baker. These units have certain limitations, necessarily so since they single out agriculture from a complex in which agriculture is not dominant. Moreover, they have not been widely adopted in subsequent literature. In fashioning a new arrangement of subregions account should be taken, more than has been true in the past, of basic natural conditions. The number of subregions which might be identified will depend chiefly upon their probable usefulness. There is the possibility, and the danger, of having too many and too minute regions and thus to defeat the essential purpose: that is, as an effective means of generalization.

Second, the larger aspects of land classification should be considered. For this there are precedents from various parts of the country, notably the Connecticut and Michigan surveys, showing what effective work can be accomplished for relatively large areas. Federal land classification maps of sections in the northern Great Plains, of which we now have a considerable number, provide a very good start in that direction. Unfortunately Colonel Birdseye is not present; I wished to ask him about the methods used in these surveys. It is obviously a hopeless task for geographers single-handed, no matter how devoted to the cause, to prepare land classification maps having any considerable coverage.

Third, one must mention the desirability of studies of population movement. The past few years have brought attention, again, to the question of population advances and retreats in this part of the country. In the beginning, perhaps necessarily, this problem was oversimplified. To show curves of population changes superimposed on curves of rainfall and to suggest plausible connections, was considered good technique. It is now apparent, from the work of Thornthwaite and others, that the problem is a very complicated one, and that we need more complete and realistic studies of population and of seasonal rainfall.

Fourth, I have listed studies of the relative magnitude of cultural changes. Studies along this line seem to be especially called for by the current emphasis and popular discussion of the "dust-bowl," as though conditions there were typical of the whole region. There has been a tendency to exaggerate the ill effects of unwise land utilization of the semiarid lands, an exaggeration which saw its worst form in a movie film called "The Plow that Broke the Plains" sponsored by a Federal agency. Dr. Strong's paper read at the National Council meeting demonstrated the recuperative powers of vegetation in a relatively short time and should dispel many of

the fears which many profess that the grasslands are permanently ruined. A statement which seems like heresy but which I should like to defend if objections to it are raised is that the semiarid region has been modified by man less than other major regions in this country.

Fifth, I have listed the need of studies in irrigated regions: The kind of study which has been performed by Kirk Bryan in the Southwest and not the kind which finds its way into Federal or State publications primarily technical in character. Scientists, including geographers, are inclined to expect too much of irrigation as a means of controlling environment and are therefore likely to belittle irrigated areas, especially the Federal projects, when observed conditions depart so widely from the ideal. In the prosecution of such irrigated land studies it should be borne constantly in mind that irrigation in the semiarid country is simply one phase of pioneering in new land and that the arrival at cultural maturity must inevitably be a slow one. Up to this time there are no studies by which we may measure the importance of irrigated areas to outlying dry lands. Such investigation would yield surprising results.

Finally, I have grouped two other points:—attack through chorographic studies and the study of cultural patterns in this region. That implies assuredly an enormous amount of detailed work, the "unremitting work" which has been advocated recently by McMurry. This is certainly a distinctive province but we must be more sure of the elements which contribute to that individuality. Just what the locale of such studies shall be is not so important. I recently suggested that such studies should be carried on in critical areas. What I had in mind in that connection was the detailed study of localities along the presumed boundary subdivisions, to see if our conjectures as to the proper limits are actually supported by field evidence.

S. D. Dodge.—I have asked Dr. Thornwaite to comment on the treatment of the Great Plains.

C. W. Thornthwaite.—I believe it would be a good undertaking for the Association to prepare a series of monographs on these regions of the United States. Each one should certainly have a distinct theme. Perhaps a theme for the two regions that have already been discussed might be taken from an article written and published in *Harper's* a few years ago by Bernard DeVoto, "The West—a Plundered Province." The Great Plains has always been a plundered province. In the Rocky Mountains man has perhaps been more picturesque in his plundering than in the Great Plains. The monograph would have a series of chapters; plundering of the mineral resources perhaps would be one; the western range, the destruction, at least the deterioration, of the range country might be another chapter; erosion and the silting of the reservoirs largely through overgrazing would be

another. We might exploit this theme of the West a plundered province, and make an interesting monograph.

One episode in the settlement of the West should certainly not be overlooked, and that is the episode dealing with the search of the Mormon's archives in Utah, and especially Salt Lake City. I believe they will be found to be the most fruitful source of information for regional geography that exists in this country. Every Mormon expedition had an official historian. Population and other statistics were taken carefully, regularly, and frequently for rather small subdivisions, and these records are all carefully preserved and are now available to the right people. I recommend a study of the West through the Mormon archives to someone who has the time and the interest for it.

Kirk Bryan.—I object to the idea that the Western United States has been plundered. If we consider one of our great mining camps, the Coeur d'Alene, a friend of mine made a calculation summing up the total amount of human labor, total investment in the Coeur d'Alene mining region in prospect holes, shafts, tunnels at twelve dollars a running foot, all the mills, plants, roads, railroads, that had ever been put in, and he compared this sum with the total production of metal, as shown by government statistics, and he discovered that the Coeur d'Alene camp had just broken even. If we consider that the Western United States has had few camps as successful as the Coeur d'Alene, and any number of failures, I think we can say that so far as the whole population of the United States is concerned, we have put more money into the western mines than has ever been compensated for by the metal taken out.

The price of metal does not pay for the whole cost of locating, prospecting, developing, and mining. It pays some individuals, and a few great deposits more than pay their way. The world community and the nation as a whole profit because metal is essential to our civilization. As a mining region the Western United States are probably still in the debit account. We should, therefore, not speak of "plundering the West" but of plundering the Eastern investor and the hopeful mining population.

George J. Miller.—May I ask just one question, Mr. Bryan? Does plundering depend upon profit? Isn't it plundering just as well if there be a loss?

S. D. Dodge.—Shall we reserve much of that argument for a larger discussion? It certainly is a point. Let us hear what Professor Kniffen has to say concerning the cultural geography of the Lower Mississippi.

THE LOWER MISSISSIPPI

Fred B. Kniffen.—I have a considerable burden to get off my chest. I can do it best, I think, if I read it.

In the first place I believe that the primary concern of cultural geography is with the nature, genesis, and distribution of the observable phenomena of the landscape directly or indirectly ascribable to man, and of course including man himself. By "observable" I mean in general "visible." For example, I should consider it of little geographical concern that 90% of the people of a given area belonged to a certain religious faith, but the characteristic expression of that particular faith in the landscape, in the form of, say, churches, wayside shrines, and cemeteries, is of primary geographical importance. In actual practice I believe the geographer should consider himself free to follow to the limit of his capacities research in problems that interest him, but I still feel that the above statement suggests the *responsibilities* of the cultural geographer, even though it does not limit him.

As the second point, I have understood that our discussion is to be more or less limited to problems needing immediate attention, which I assume to be those whose solution will be made more difficult by delay, because of such factors as loss of record.

As the last point, I have excluded certain problems having to do with destructive occupance, notably soil erosion and depletion, because they do not fall entirely within the field of cultural geography. It is true that erosion history is very much a part of cultural geography, but the study of erosion processes can be handled better by geomorphologists. In addition, it seems to me that cultural geography has such a vast untilled field, that it may be glad to yield to, or share with, allied disciplines any debatable plots.

Though the expression "Lower Mississippi Valley" is used loosely to apply to the region adjacent to the Mississippi below Cairo, it may validly be restricted to a rather definite region including the flood plain of the Mississippi below Cairo and as well the contiguous portions of the flood plains of several tributary streams, notably the Red, Yazoo, White, and St. Francis. The boundary of the region should be drawn so as to include at least a portion of the adjacent loessial bluff lands. Culturally, the region is united by several elements, such as distinctive economic practices; concern with major waterways both as navigable streams and as flood menaces; and plantation organization; and it is distinguished from adjacent regions by elements which may themselves be the basis for regional subdivision, such as house types, character of farmstead assemblages, etc.

Not only for the Lower Mississippi Valley, but for any geographical area, I regard as the first and most pressing problem in cultural geography the classification and distributional study of the cultural forms of the landscape, in other words, the recognition of culturo-geographic regions. This procedure, it seems to me, must be basic and preliminary to detailed regional studies. I shall briefly explain what I mean, and why I believe it to be the logical approach.

It has struck me that most present studies in the field of cultural geography are notably deficient in that they fail of common expression or terminology of such a sort as to permit of synthesis. It seems not an unfair analogy to suggest the biologist doing a study in ecology without a definite terminology for the species with which he is dealing. Certainly the bulk of geographic studies lack qualitative and quantitative expression of the elements with which they deal, and I for one have found it impossible to synthesize them. I also seriously object to the studies which profess to be typical of a number of areas or sites of like qualities, for it seems apparent that every specific area or site is unique. Of course, if cultural geography is content to be unsystematic, with each study an entity unto itself, my objections are not valid. But, if cultural geography is to be systematic, it appears that our procedure must be altered.

The first fundamental step in an organized attack, which we in America have largely avoided, is the necessity for a systematic classification of the individual elements of the cultural landscape: houses and other buildings, roads, fields, fences, agricultural implements, and boats, to mention only a varied few. One might say that cultural geography occupies somewhat the disorganized position of the biological sciences prior to the time of Linnaeus, and that the work to be done is not unlike that accomplished by the great systematist. This demands generalization into groupings analogous to the biologists' families, genera, and species, always tempered by the recognition that culture is not nature, nor is it organic, so that our job is perhaps somewhat more difficult than that of the biologist. It is also quite possible that everything of importance to cultural geography can not be reduced to a systematic base, but that is no good reason for not proceeding as far as we can. The first step, as I see it, includes the recognition and naming of the elements and the plotting of their distributions.

The second step involves the recognition and distribution of associations of elements, or what may be termed "element complexes." Here we consider combinations of buildings, roads, and fields, for instance, into city or rural patterns, with cognizance of spacing and orientation with regard to each other. At this stage we are still dealing with generalizations rather than with specific instances. We are still erecting categories in our classification.

The third step is still generalization. It involves the recognition of a real unity of expression of elements and element complexes, or of what I have called culturo-geographic regions. The selection of the boundaries, or rather the nuclei of culturo-geographic regions, must be made with full recognition of preexisting consciousness of regional differences, just as the climatologist in setting up his climatic types takes into account the distribution of natural phenomena.

Specific regional studies come only as the concluding step. Their position with respect to culturo-geographic regions is comparable to the relation of an ecologic study of a specific site to the life zone within which it lies, or the climatology of a given area to its general climatic type. In the regional study consideration is given not only to the position of the specific area within the culturo-geographic region, but also to the unique and unusual forms and patterns that do not fit into the generalized classification. It recognizes and studies the relationship between a specific portion of a culturo-geographic region and its specific natural site.

I urge the immediate necessity for procedure along the course outlined, particularly with respect to the first or classificatory steps, in the main because they have been so long delayed and because they should be basic to further studies of a specific or regional nature. Another reason for dispatch bears on the fact that classification must be based not only on morphology, but also on genesis. The genetic relationship of two house types, for instance, can generally be established only by delving into the past and securing the actual record of historic relationships and derivations. With the passage of time and the inevitable loss of the forms themselves this task becomes increasingly difficult.

In the Lower Mississippi Valley, the start has been made along the lines suggested above, and so far no serious difficulties have been encountered. By means of traverse surveys a method has been worked out for quickly recording the individual elements in their varying expression and their association in element complexes. The data for Louisiana have been in large part accumulated. It is estimated that two complete field seasons would provide the data necessary to the working out of the culturo-geographic regions for the whole of the Lower Mississippi Valley.

The first of the specific problems is concerned with the abandonment of agricultural land. Generally such changes are unrecorded but are startlingly revealed when one encounters old furrows in what is now apparently primeval forest, or are suggested by almost unbelievable figures of former productivity. Since these changes are not matters of record, their extent can hardly be estimated. Though primitive deadenings with girdled trees and plantings among the stumps are still a common sight, it is believed that over a long period of time there has been a net loss in area under cultivation. All the major crop areas have been affected: cotton, sugar cane, and rice. Several factors seem to have shared responsibility: changes in economic conditions, soil erosion and depletion, and plant disease. The importance of the record of such changes in agricultural occupance in any regional study is patent. In the recovery of the facts the meagre documentation must be supplemented by field work and the word-of-mouth evidence of elderly

people, and therein lies the necessity for immediate attention. Investigations of this nature have been initiated by an excellent study of agricultural decline in the vicinity of Natchez, Mississippi.

Another field of special or regional investigation is the study of old river ports on the Mississippi. The waning importance of water transport, the competition of railroads, the decline of the hinterland, and even shifts of the river's channels, have left stranded a number of what were formerly important river ports, many of which have declined almost to oblivion. Not only have they ceased to function as ports, but even the dwellings, warehouses, and patterns of streets have frequently been almost obliterated. Most of the data must be recovered from the uncertain memories of old residents or from documents and maps in family archives, if we may use so dignified a term.

An excellent start has been made in this field in a study of Port Hudson, Louisiana, once an important port and fort, and now hardly more than an historic tradition. Only with the utmost perseverance, using every shred of information, checked and rechecked in the field, was it possible to trace the beginning, expansion, and decline of Port Hudson's urban pattern. An incident in the course of the study indicates the tenuous nature of connections with the past. After the study of Port Hudson was well along it was found that the death of a single individual only a few days previously had left probably permanently obscure many details concerning the earliest history of the town. The paucity of records can hardly be appreciated until one has tried to use them for geographic ends.

Another recent study in Louisiana has opened a new and significant field and pointed out the difficulty inherent in the task. This study deals with the growth of the road pattern in three parishes near Baton Rouge. The changes from man-used animal trails to modern highways, with their scant regard for natural terrain, are a significant part of the geographic treatment of any area. Old maps, land plats, and surveyors' notes offered clues which must be checked by field observations and carefully evaluated reminiscences. It is in the latter two respects that delay is costly.

Another problem of pressing importance has to do with temporary exploitive occupance. For Louisiana this means lumber, salt, sulphur, oil, and gas. Fortunately, the record of mineral exploitation is excellently kept, so that the urgent need for investigation is directed toward the geographic aspects of the cutting and manufacture of timber. In large sections the industry was pursued systematically. Towns were built; miles of railway track laid, canals dredged to stands of cypress. The industry reached a climax perhaps twenty years ago, but already there are abandoned towns and mills, miles of cut-over land, and more miles of abandoned railways.

In the absence of satisfactory documentation it is necessary to resort to field observations and the testimony of those who participated in the activities of the industry. Already it is sometimes difficult to obtain reliable information, as when I recently asked the local inhabitants questions concerning some old railway trestles spanning a small stream, only to find a very unsatisfactory divergence of opinions.

There are in Louisiana many small but compact groups whose cultural heritages are quite different from those of the dominant Anglo-Saxon and French. I may mention Czech, Mexican, Spaniard, Canary Islander, Malay, Italian, and German. There is at least the suggestion that several of these groups have made significant contributions to the elements of the cultural landscape. Certainly their presence and activities are important in regional treatment, and their study may throw some light on the genesis and relations of various culture elements.

I hope I have made it clear in discussing the problems facing the geographer in the lower Mississippi Valley that I distinguish two groups of problems, the one concerned with the general and classificatory and the other with the specific and regional. I believe that the former is basic to the latter, but for the practical reason of possible loss of data there must be some concern for the specific. In this connection, I hope that cultural geographers of the future may find a better record of the present than we do of the past.

If my outline for the systematic study of cultural geography may appear rather rigid, I would have you understand that I hardly expect a geographer's activities to be so limited, nor do I believe they should be. I think his research should be limited only by his curiosity and competence. I have no great interest in arguments as to whether a particular field or subject is or is not geography. But I do feel that cultural geographers have definite responsibilities, some of which I have outlined above.

S. D. Dodge.—I had asked Professor Finch to comment on this presentation, but he is unable to be here. I was going to ask Professor Russell to comment, and I hope he will later on. I think, then, we may turn to a discussion of the Great Lakes. Professor Hall!

THE GREAT LAKES

R. B. Hall.—In the outline that I presented to Dr. Dodge, I laid overwhelming emphasis on settlements. I did that because it appears to me that the settlement sums up more completely the geographic environment than any other one thing. Many of you have seen Dr. Hinsdale's Atlas of Prehistoric Michigan, and if you have looked at the large map which he made of Indian population, gathered from the camp sites and trails, from

all sorts of material, I think you have been immediately impressed with the fact that the American Indians lived in much the same places that we are living in today, the chief difference being a matter of density. Most of the Indians lived in the southern part of Michigan and along the lake shores.

There has been a great deal of generalization in this region. It seems to me that the next step, and the only step worth while is to approach the various problems in detail, and if we accept settlements as one way of approaching these problems, there are at least two possible avenues of procedure. One is the type of thing which Professor Dodge has done so ably in the detailed study of population trends; another approach, the settlement, is perhaps exemplified by Professor Kniffen's recent study of house types, and that can be carried, of course, into the entire morphology of settlement, involving roads, etc. That is the first approach. Then, the detailed reconstruction of *particular problems,* particular processes of settlement, if we can term it that—the second approach in these detailed studies of settlement is through the reconstruction of local history, the intensive study of small localities. In these studies we should attempt to layer occupance upon occupance in much the same manner as the geologist studies stratifications, and each of these occupance layers can be correlated, locality by locality. Then, finally, a new analysis of this vast amount of geographic material and near-geographic material, studied and correlated with these detailed studies. All of these studies I have in mind of course are as contributions to the end of all geography, which is the regional study, but I have a feeling that in this area, at least, we can approach the broader regional problem through culture, particularly through settlement, just as well as we can start with the more orthodox method of beginning with the land.

One thing seems certain, and that is that the reconnaisance period is over in the Great Lakes district, as it is in all those parts of the world where an abundance of general material is available or where there are accurate and detailed maps.

S. D. Dodge.—The person I had hoped would comment on the problems involved in the Great Lakes area is unable to be present. I think we might reserve the argument concerning them until after we have heard from Professor Whittlesey on the geography of New England.

NEW ENGLAND

Derwent Whittlesey.—I wish to stress the fact that, while we are trying to concentrate on cultural geography, we all are nevertheless discussing *regions.* This remains true, in spite of the fact that no two of the regions has been attacked from the same point of view. There is no reason why one should broach a region at one place rather than another, in theory. In

practice it seems to me that the New England region might be approached from the standpoint of population, perhaps largely because of the excellent population studies that have been made by Dodge, Wright, and others. Therefore, I think I should tackle this particular job by going further with population studies and particularly with relating population specifically to the area. If we can refine the distribution of population in such a way as to know precisely where the population is, we have gone a long way toward understanding the cultural geography of the region.

Then, having got at the subject from the standpoint of population, I think next we might try to seize upon the appearance of the landscape in its more visible forms. I might put down as a catch-word heading "House Types." I can only refer those of you who do not know what I mean by that to the extraordinarily interesting and, it seems to me, significant article that Professor Kniffen has recently published on house types in Louisiana. There is an immense amount of work to be done on house types in New England, and the subject has scarcely been touched. The problem of house types in New England is enormously complex and would bear very rich fruit if it were investigated. There might be a number of other similar approaches to the visible elements of the landscape. I won't touch on them in detail, but let the house type stand as the most conspicuous example of the sort of study I should like to see worked out.

Then, there is the notion of the whole mosaic of individual entities (or areas, if you wish)—population entities, cultural entities, entities that in New England roughly coincide with "towns." The difficulty of getting them on to a basis that is comparable is great, and I suspect that they can not be made comparable until we have done a lot of fundamental work in getting at a uniform procedure in studying such things as house types and street patterns, and other aspects of the visible landscape. Nevertheless, I should say that before we get very far we have got to deal with the arrangement (pattern) and the functions of the areal entities as they appear at the present day in the visible landscape.

Now, this includes also my next point: although we start with the present we can not be content with the present. Nearly everybody, I think, who has talked on the different regions this evening, has pointed that out. We agree on recognizing the past, but I should like to observe that, as the geologist studies the strata he finds, but for lack of data can not study what was laid down immediately above unconformities, so any geographer who undertakes to study the complete sequence of occupance in an area is bound to strike lacunae. Obviously we must rest our study on the data we find. This is not a serious handicap, because sequent occupance implies that what has existed in the past is our concern only if it has left vestiges and so exists also, in effect, in the present.

The only truly reliable source of geographic information is the visible landscape of the present. Study of past stages of occupance requires the use of data of the most miscellaneous origin and sometimes necessitates interpolations. This does not mean that we should refuse to consider the past, but it does suggest the importance of working out a technique for a geographic study of the cultural landscape of the present. On the basis of well-rounded studies of the present day, future geographers may be able to establish a sequence of occupance far more exact than we can discern.

The administrative organization of New England is a significant item in its cultural geography. I have already referred to the "town." The county has little reality in that part of the country, but the state boundaries are cultural items of considerable significance. In the larger cities, other administrative aggregations are critical. I need only point out that only half the population of geographic Boston lives within that city's administrative limits.

These studies of the several aspects of cultural geography will most easily be made if the attack on the problem is made by regions. Incidentally, the geographer's maps of the cultural landscape ought to be very useful to land planning, a subject which has come to the fore during the past few years.

S. D. Dodge.—Thank you. We have now covered a rather wide range of topics, which I think can be boiled down in the end to two main points with two subdivisions to one of them. (1) The problem presented by Professor Kniffen—classification of various cultural elements. If we are going to do anything with them, it is certainly a very vital problem. (2) All the other problems, it seems to me, have boiled themselves down ultimately to consideration of the historical aspects of the various areas we may study, and under these there are two totally different problems, (a) that of population itself and (b) that of the various cultural phenomena. Professor Whittlesey mentioned the fact that as far as occupance is concerned he was not willing to consider every point in the history of an area. I don't think that many of us would. It seems to me that sequent occupance might well be limited to those points in the whole history of population growth where significant population changes have taken place. It is a point which I am throwing open for argument in a moment.

In connection with what Professor Bryan said, there is one line of approach which is perhaps not strictly geographical, and that is the economics of small areas. Professor Bryan pointed out that in certain mining areas more money had gone in than has ever come out. We do not have, except for a very few areas, these detailed economic studies to show the balance of trade between a county and areas outside it. Where does the

income for the people or the county lie? There have been a few studies along these lines of enormous significance, it seems to me, and we should keep track of and urge the preparation of more studies along that line.

This whole problem, then, is open for discussion, and I hope that we may keep our ideas more or less distinct along these two lines.

W. Elmer Ekblaw.—Do you limit the definition of culture to material culture, or not? The other factors of culture are so wide and so broad that if we do not wish to discuss them, we ought to know it at the beginning.

S. D. Dodge.—Stuart Chase in his recent book *Rich Land, Poor Land* has a definition of a cultural region which I may paraphrase in this way: "A cultural region is one in which people think uniformly." It seems to me that thinking uniformly is expressed in terms of language and, perhaps with a map, it is as good an index as you may have of culture distribution; anyway, a fruitful line of approach to the whole problem of cultural geography.

W. Elmer Ekblaw.—I should think that would complicate our discussion, because of the overlapping classifications that would come as a consequence of it. I have in mind the discussion of New England's type of house, in which one very reputable author undertook to place European ancestry of the New England house type and went into England, into the various parts of England, and found there the prototypes of houses such as we have in New England. But these transplanted cultural elements do not follow the geographic distribution—quite a different one in fact.

Fred B. Kniffen.—Well, I thought I had made the point clear that when I was talking about culture I used the term cultural geography so as not to include all phases of culture, and I also said that we should deal in general with the visible forms of the landscape. I certainly intended to make it clear that we ought to deal with material culture, and not with non-material culture.

Voice.—Are you talking about influence?

Fred B. Kniffen.—I used the term observable, which generally means visible.

Derwent Whittlesey.—Why is soil cultural?

Fred B. Kniffen.—Well, according to my way of thinking, it is not, but soil erosion is.

W. Elmer Ekblaw.—One more distinction here in Dr. Kniffen's own territory. He has mentioned Jefferson City, once at the head of navigation, Shreveport at the present time. Jefferson City was at one time a city of 30,000 inhabitants; the buildings still stand there; but more significant than decline of population is the fact that there remains a culture at the head of navigation which is distinctive of an earlier period. The folk have the old community sings there which they had in the Carolinas, because migration

from coastal Carolina came up the river. In Texarkana, and throughout that section of Texas, you find Carolina names, the old folk songs, customs, and folklore of rural England, carried up the valley to that point. Now, that is a tangible thing, essentially geographic in its movements and functions.

Fred B. Kniffen.—I grant you that, but it should be left to the sociologists.

Ellsworth Huntington.—I should like to make a comment. Then I want to ask a question. These very suggestive and interesting remarks have led up to the whole problem we are dealing with, a dynamic problem, the essence of the whole thing. We are dealing with fixed areas of land, the character of which can not change greatly. But we are dealing also with a population which changes, and it seems to me that we need to consider what are the geographic and other elements which produce these changes. While we have been sitting here I have been putting down an imperfect list of the factors which are changing and inducing change, and which therefore must be considered in analyzing the geographic responses, and I want to read these briefly to you, and then I want to raise a question which seems to me to be one of the most important in our whole geographical study.

Here are some of the things which are producing changes. Each involves a change in population. First, exhaustion of our resources. We have many kinds of resources which are exhausted. The soil becomes exhausted by over-cropping. It becomes eroded, and therefore there is less soil available. Minerals are very important elements which become exhausted. Forests, too, and lumbermen have to move elsewhere. Then, second, fluctuation in the supply of resources. The biggest cause of changes in the supply of resources perhaps is drought. Drought means no wheat grown, or little grown, in a region where there is habitually a great deal of wheat grown in good years. This causes changes in habits of people living there, and these changes are reflected in the demand for different products. We all know that the per capita consumption of wheat in this country has gone down, whereas consumption of vegetables and fresh fruit has gone up. That involves movement of population from one place to another.

Again, we have changes in the type of production, for example, automobiles. That immediately involves a new technique—a number of people who have got to go somewhere and settle somewhere. We have many other changes of that same kind.

Now, in the very nature of things, we are becoming more and more mobile. Therefore a surplus in one place will go some place else where there is a deficit and not a surplus. There are many more conditions which might be mentioned, but these are enough to make us realize that in this problem

we must analyze not only the landscape around us, but also the changes which take place in it. The question is: How far is the geographer concerned with the quality of the people? It seems to me that is a very vital question, but I don't think the geographer can neglect it. We have been talking about the number of people who move. A large part of our town population changes very rapidly. One of the most vital questions is, "What kind of people move?" Is it the literate or the illiterate who go away from the drought-stricken farms? Do the successful farmers go, or the unsuccessful? Who goes to Detroit when the automobile business flourishes? Is it the people who have been successful elsewhere, or is it the people who are not successful elsewhere? I know that the answers are very difficult, but it seems to me that if our study is going to be fruitful we have got to face these questions, because the question of the quality of our population is coming more and more to the fore.

George D. Hubbard.—Perhaps what I have to say will fit in here as well as anywhere. Professor Huntington has suggested two or three things that I want to connect with. The interrelations of the region's population movements mean just that sort of thing, but in nearly every one of these regions, it seems to me, there are already a good many interrelations of one region with another. We talk about capital moving into the mountain regions, and, of course, the minerals that were mined were never used there. They moved out, to be used elsewhere. No one mentioned the floods in the Lower Mississippi, but they are very important geographic factors in moving population, and in moving resources. These are not problems which the region itself can settle at all. They are interregional problems.

Lester E. Klimm.—In the search for a definition of culture, I wonder if we have rather hindered than helped our attempt to get the picture straight when we depart from the Englishman's use of the word "topography." The Englishman considers that the word topography includes not only the surface of the land, but the material culture on it. The Englishman does not accept the terminology that we use, and the setting off of the things that man has put on the map in some different color, or some different symbolism. The old English studies into topography, into county topography, were just as much interested in the distribution of graveyards and churches and the lay-out of farms as they were in the surface of the land.

Wallace W. Atwood, Jr.—I should like to make a suggestion which may prove useful in carrying out these cultural studies. When a unit study has been made, instead of considering the job complete, plan to re-study it after a period of five or ten years. I believe that same areas that have been studied in the past would exhibit many changes if re-examined today. By

making periodic surveys we might develop a moving picture of the cultural development within a given area. A comparative study is possibly one way of obtaining a more complete picture of cultural problems.

Another thought I should like to present at this time concerns group effort in carrying out regional study. This method is being tried by the geologists. I have just come from the Geological Society of America meetings, where I have seen the results of one such joint enterprise. There are some twenty geologists working in the Big Horn Basin. They are taking up every phase of geology and are obtaining a mighty fine perspective. Could we follow a similar plan? Could we pick some appropriate area and analyze it from the various angles of geography? If this were done, we would have a regional treatment of greater value. A similar study might be conducted five or ten years hence. Interpretations of these studies would give us an action picture of regional and cultural development. In this manner we might increase our ability to prophesy what is going to happen in different regions.

Robert S. Platt.—Several of the statements have tended to bring us together in some way, and yet I feel more impressed by the variety of attacks than by the unity of attack. Twenty years ago we were discussing what geography is. That was the beginning of a sort of era through which we have come. Though we are still asking this question, "What is geography?" I think most of us know what it means to us and are ready for new questions. Perhaps in this way now in starting an attack on regions, we are going to go forward with cooperative effort that will lead us, through discussion, to a final nailing down of the characteristics of the various regions of North America and of the world.

S. D. Dodge.—The questions which have been brought up in this most recent discussion will, perhaps, summarize what has been developed. Should culture be limited to material culture? It seems to me to be a problem which we should settle. Professor Kniffen has suggested that we deal with material culture. There is a possibility, however, that other aspects of culture, which may be mapped, to be sure, may have an important bearing on the interpretation of material culture, so that we may at least inform ourselves, even though we do not concern ourselves directly with the other aspects of culture than material ones which have a topographic expression.

The second question: "How far is a geographer concerned with the quality of the people who move?" involves numerous difficulties, of course. I am interested in the study and restudy of areas already studied to see what the changes have been. This involves another fundamental problem, the degree of cultural change.

Another problem which occurred to me, and one which may be the subject of rather acrimonious debate, is the whole question of regional specialization *versus* topical specialization. It has been suggested here tonight that those dealing with certain topics were incapable of handling certain other topics. On the other hand, there are a number of others, I know, who believe that the geographer is competent to handle any problem of description, of interpretation, of classification, connected with a region. These are two fundamentally different points of view which I think are going to have to be resolved if we are to proceed along a direct course toward a unified method of handling problems in cultural geography. To what extent can we, as geographers, handle a wide range of problems? Must we limit ourselves to a small and very restricted group of intimately related problems?

I hope that from these points the discussion may go on, either here or elsewhere in smaller groups.